

IN THE CLAIMS:

1. (previously presented) An ultrasonic motor comprising: a piezoelectric vibrating member having a detecting polarized portion for detecting a drive signal having a drive frequency of the detecting polarized portion and a driving polarized portion for receiving the drive signal to oscillate the piezoelectric vibrating member in self-excited oscillation to produce a drive force, the detecting polarized portion being disposed at a portion of the piezoelectric vibrating member which undergoes maximum deformation in at least one vibration mode of oscillation of the piezoelectric vibrating member; and an amplifying circuit for amplifying the drive signal detected by the detecting polarized portion and inputting the amplified signal to the driving polarized portion to oscillate the piezoelectric vibrating member.

2. (previously presented) An ultrasonic motor comprising: a piezoelectric vibrating member having a detecting polarized portion for detecting a drive signal having a drive frequency of the detecting polarized portion and a driving polarized portion for receiving the drive signal to produce a flexion vibration wave for oscillating the piezoelectric vibrating member in self-excited oscillation to produce a drive force, the detecting polarized portion being disposed at a portion of the piezoelectric vibrating member

which undergoes maximum deformation in at least one vibration mode of oscillation of the piezoelectric vibrating member and being disposed at a position symmetrical about a loop of the flexion vibration wave; and an amplifying circuit for amplifying the drive signal detected by the detecting polarized portion and inputting the amplified signal to the driving polarized portion to oscillate the piezoelectric vibrating member.

3. (previously presented) An ultrasonic motor comprising: a piezoelectric vibrating member having a first driving polarized portion for generating a first flexion vibration wave, a second driving polarized portion for generating a second flexion vibration wave having a phase different from that of the first flexion vibration wave, and a detecting polarized portion disposed at a portion of the piezoelectric vibrating member which undergoes maximum deformation in at least one vibration mode of oscillation of the piezoelectric vibrating member and disposed at a position symmetrical about a loop of one of the first flexion vibration wave and the second flexion vibration wave for detecting a drive signal having a drive frequency of the detecting polarized portion in accordance with oscillation of the first driving polarized portion; and an amplifying circuit for amplifying the drive signal detected by the detecting polarized portion and inputting the amplified signal to one of

the first and second driving polarized portions for oscillating the piezoelectric vibrating member in self-excited oscillation to produce a drive force.

4. (previously presented) An ultrasonic motor according to claim 3; further comprising a phase shift circuit for shifting a phase of the drive signal amplified by the amplifying circuit and inputting the drive signal shifted in phase to the other of the first and second driving polarized portions.

5. (canceled).

6. (previously presented) An ultrasonic motor comprising: a piezoelectric vibrating member having a first driving polarized portion for generating a stretching vibration wave, a second driving polarized portion for generating a flexion vibrating wave, and a detecting polarized portion disposed at a portion of the piezoelectric vibrating member which undergoes maximum deformation in at least one vibration mode of oscillation of the piezoelectric vibrating member and disposed at a position symmetrical about one of a node of the stretching vibration wave and a loop of the flexion vibration wave for detecting a drive signal having a drive frequency of the detecting polarized portion in accordance with oscillation of one of the first driving polarized portion and the second driving polarized portion,

respectively; and amplifying means for amplifying the drive signal detected by the detecting polarized portion and inputting the amplified signal to the first and second driving polarized portions for oscillating the piezoelectric vibrating member in self-excited oscillation to produce a drive force.

7. (previously presented) An ultrasonic motor according to claim 6; wherein the detecting polarized portion is disposed symmetrical about the node of the stretching vibration wave for detecting the drive signal in accordance with oscillation of the first driving polarized portion.

8. (previously presented) An ultrasonic motor according to claim 7; wherein the amplifying means includes means for feeding the amplified signal back to one of the first and second driving polarized portions.

9. (previously presented) An ultrasonic motor according to claim 8; further comprising a phase shift circuit disposed between the amplifying means and one of the first and second driving polarized portions for shifting a phase of the drive signal amplified by the amplifying means.

10. (previously presented) An ultrasonic motor according to claim 3; wherein the piezoelectric vibrating member is generally cylindrical-shaped and has an end face disposed at a maximum displacement point for undergoing movement by the oscillation generated by the first flexion vibrating wave and the second flexion vibrating wave.

11. (previously presented) An ultrasonic motor comprising: a piezoelectric vibrating member; a driving electrode disposed on the piezoelectric vibrating member for undergoing vertical vibration to vibrate the piezoelectric vibrating member in self-excited vibration to produce a drive force; a detecting electrode for detecting a drive signal having a drive frequency of the detecting electrode in accordance with vibration of the driving electrode, the detecting electrode being disposed at a portion of the piezoelectric vibrating member which undergoes maximum deformation in at least one vibration mode of oscillation of the piezoelectric vibrating member; and an amplifying circuit for amplifying the drive signal detected by the detecting electrode and inputting the amplified drive signal to the driving electrode to vibrate the piezoelectric vibrating member.

12. (previously presented) An ultrasonic motor comprising: a piezoelectric vibrating member; a driving electrode disposed on the piezoelectric vibrating member for undergoing torsional vibration to vibrate the piezoelectric vibrating member in self-excited vibration to produce a drive force; a detecting electrode for detecting a drive signal having a drive frequency of the detecting electrode in accordance with vibration of the driving electrode, the detecting electrode being disposed at a portion of the

piezoelectric vibrating member which undergoes maximum deformation in at least one vibration mode of oscillation of the piezoelectric vibrating member; and an amplifying circuit for amplifying the drive signal detected by the detecting electrode and inputting the amplified drive signal to the driving electrode to vibrate the piezoelectric vibrating member.

13. (previously presented) An ultrasonic motor according to claim 11; wherein the detecting electrode is spaced apart from the driving electrode in a vertical vibrating direction thereof.

14. (previously presented) An ultrasonic motor according to claim 12; wherein the detecting electrode is spaced apart from the driving electrode in a thickness direction thereof.

15. - 21. (canceled).

22. (previously presented) An ultrasonic motor according to claim 1; wherein the detecting polarized portion overlies and is integral with the driving polarized portion.

23. (previously presented) An electronic apparatus comprising: an ultrasonic motor as claimed in claim 1; a moving member connected to the piezoelectric vibrating member of the ultrasonic motor for undergoing movement in accordance

with oscillation of the piezoelectric vibrating member; an output mechanism; and a transmission mechanism for transmitting movement of the moving member to the output mechanism.

24. (previously presented) An ultrasonic motor according to claim 2; wherein the detecting polarized portion overlies and is integral with the driving polarized portion.

25. (previously presented) An electronic apparatus comprising: an ultrasonic motor as claimed in claim 2; a moving member connected to the piezoelectric vibrating member of the ultrasonic motor for undergoing movement in accordance with oscillation of the piezoelectric vibrating member; an output mechanism; and a transmission mechanism for transmitting movement of the moving member to the output mechanism.

26. (previously presented) An ultrasonic motor according to claim 3; wherein the detecting polarized portion overlies and is integral with the driving polarized portion.

27. (previously presented) An ultrasonic motor according to claim 3; further comprising a phase shift circuit for shifting a phase of the drive signal amplified by the amplifying circuit; and a buffer circuit having a high input impedance and a low output impedance disposed between the amplifying circuit and the phase shift circuit.

28. (previously presented) An ultrasonic motor according to claim 27; further comprising a second amplifying circuit disposed between the phase shift circuit and the second driving polarized portion for amplifying the drive signal shifted in phase by the phase shift circuit.

29. (previously presented) An electronic apparatus comprising: an ultrasonic motor as claimed in claim 3; a moving member connected to the piezoelectric vibrating member of the ultrasonic motor for undergoing movement in accordance with oscillation of the piezoelectric vibrating member; an output mechanism; and a transmission mechanism for transmitting movement of the moving member to the output mechanism.

30. (previously presented) An ultrasonic motor according to claim 4; wherein the detecting polarized portion overlies and is integral with the driving polarized portion.

31. (previously presented) An ultrasonic motor according to claim 4; further comprising a buffer circuit having a high input impedance and a low output impedance disposed between the amplifying circuit and the phase shift circuit.

32. (previously presented) An ultrasonic motor according to claim 31; further comprising a second amplifying circuit disposed between the phase shift circuit and the second driving polarized portion for amplifying the drive signal shifted in phase by the phase shift circuit.

33. - 34. (canceled).

35. (previously presented) An ultrasonic motor according to claim 6; wherein the amplifying means includes means for feeding the amplified signal back to one of the first and second electrodes.

36. (previously presented) An ultrasonic motor according to claim 6; wherein the detecting electrode overlies and is integral with the driving electrode.

37. (previously presented) An electronic apparatus comprising: an ultrasonic motor as claimed in claim 6; a moving member connected to the piezoelectric vibrating member of the ultrasonic motor for undergoing movement in accordance with oscillation of the piezoelectric vibrating member; an output mechanism; and a transmission mechanism for transmitting movement of the moving member to the output mechanism.

38. (previously presented) An ultrasonic motor according to claim 6; wherein the detecting polarized portion is disposed symmetrical about the loop of the flexion vibration wave for detecting the drive signal in accordance with the second driving polarized portion.

39. (previously presented) An ultrasonic motor according to claim 7; wherein the detecting electrode overlies and is integral with the driving electrode.

40. (previously presented) An ultrasonic motor according to claim 8; wherein the detecting electrode overlies and is integral with the driving electrode.

41. (previously presented) An ultrasonic motor according to claim 9; wherein the detecting electrode overlies and is integral with the driving electrode.

42. (previously presented) An ultrasonic motor according to claim 9; further comprising a buffer circuit having a high input impedance and a low output impedance disposed between the amplifying circuit and the phase shift circuit.

43. (previously presented) An ultrasonic motor according to claim 42; further comprising a second amplifying circuit disposed between the phase shift circuit and the second driving polarized portion for amplifying the drive signal shifted in phase by the phase shift circuit.

44. (previously presented) An ultrasonic motor according to claim 11; wherein the detecting electrode is disposed on a portion of the driving electrode.

45. (previously presented) An electronic apparatus comprising: an ultrasonic motor as claimed in claim 11; a moving member connected to the piezoelectric vibrating member of the ultrasonic motor for undergoing movement in accordance with oscillation of the piezoelectric vibrating member; an output mechanism; and a transmission mechanism for transmitting movement of the moving member to the output mechanism.

46. (previously presented) An ultrasonic motor according to claim 12; wherein the detecting electrode is disposed on a portion of the driving electrode.

47. (previously presented) An electronic apparatus comprising: an ultrasonic motor as claimed in claim 12; a moving member connected to the piezoelectric vibrating member of the ultrasonic motor for undergoing movement in accordance with oscillation of the piezoelectric vibrating member; an output mechanism; and a transmission mechanism for transmitting movement of the moving member to the output mechanism.

48.-51. (canceled).